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**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>PCT-55</b>	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. <b>PCT/JP98/03962</b>	International filing date (day/month/year) <b>03 September 1998 (03.09.1998)</b>	Priority date (day/month/year) <b>08 September 1997 (08.09.1997)</b>
International Patent Classification (IPC) or national classification and IPC <b>G01N 29/24, 29/22</b>		
Applicant <b>OSAKA GAS CO., LTD.</b>		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>4</u> sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of _____ sheets.</p>
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I <input checked="" type="checkbox"/> Basis of the report</li> <li>II <input type="checkbox"/> Priority</li> <li>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li>IV <input type="checkbox"/> Lack of unity of invention</li> <li>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI <input type="checkbox"/> Certain documents cited</li> <li>VII <input type="checkbox"/> Certain defects in the international application</li> <li>VIII <input type="checkbox"/> Certain observations on the international application</li> </ul>

Date of submission of the demand <b>12 February 1999 (12.02.1999)</b>	Date of completion of this report <b>16 June 1999 (16.06.1999)</b>
Name and mailing address of the IPEA/JP Japanese Patent Office, 4-3 Kasumigaseki 3-chome Chiyoda-ku, Tokyo 100-8915, Japan Facsimile No.	Authorized officer  Telephone No. (81-3) 3581 1101

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP98/03962

## I. Basis of the report

### 1. With regard to the elements of the international application:\*

- ☒ the international application as originally filed
- ☐ the description:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the claims:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, as amended (together with any statement under Article 19  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the drawings:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

### 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

### 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

### 4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/fig \_\_\_\_\_

### 5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP98/03962

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims	1-11	YES
	Claims		NO
Inventive step (IS)	Claims	3,5-11	YES
	Claims	1,2,4	NO
Industrial applicability (IA)	Claims	1-11	YES
	Claims		NO

**2. Citations and explanations****Claims 1, 2 and 4**

Document 1 [JP, 8-275944, A (Nihon Dempa Kogyo Co., Ltd.), 22 October, 1996 (22.10.96), full text, Figs. 1-3 (Family: none)] describes a focusing longitudinal wave ultrasonic probe provided with a matching material having an input end face in close contact with the concave surface of a curved piezoelectric element and an output end face adapted to the surface of a test piece, wherein the acoustic impedance of the matching material is matched with that of the test piece.

Document 2 [JP, 4-340464, A (Nissan Motor Co., Ltd.), 26 November, 1992 (26.11.92), full text, Figs 1-11 (Family: none)] describes that a polymer material as a test piece is ultrasonically inspected by an ultrasonic probe.

Document 3 [JP, 57-162591, A (Yokogawa Electric Corp.), 6 October, 1982 (06.10.82), claims, Figs. 3-4 (Family: none)] describes the use of a polymeric piezoelectric material as a piezoelectric element, and an ultrasonic probe, the matching material of which is matched with the piezoelectric element in acoustic impedance.

Since documents 1-3 are concerned with ultrasonic inspection, it is obvious to a person skilled in the art, to combine their technical matters.

**Claims 3 and 5-7**

Documents 1, 2 and 3 respectively describe the above techniques, but neither describe nor suggest that the acoustic impedance of a matching material is matched with both the acoustic impedances of a piezoelectric element and a test piece.

**Claims 8-11**

Document 4 [JP, 9-210971, A (Kubota Corp.), 15 August, 1997 (15.08.97), full text, Figs. 1-4 (Family: none)] is a document showing the general state of art in this technical field and describes a technique concerning flaw discrimination using two gates for detecting ultrasonic reflection echoes. However, it neither describes nor suggests the flaw evaluation of a polymer material, using a first gate for detecting the flaw echo of a fused wire section used as a predetermined reflection source and a second gate for detecting the flaw of a fusing section.